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WEIGHT OF SEEDS AS RELATED TO THEIR NUMBER AND POSITION IN THE POD

BY BYRON D. HALSTED

SOYBEANS

The seeds of soybeans vary somewhat in size as they are found in the commercial packet. This is due, in part, to the size of the pod, that is, the number of seeds, and to their position in the pod, as the figures in the accompanying table show.

WEIGHT IN GRAMS OF SEEDS OF SOYBEANS

Type of Pod	Early Brown	Wilson	Ito San	Average	Pod Average
1-seeded . . . . .	.210	.141	.200	.184	.184
2- " base . . . . .	.177	.139	.190	.169	.173
2- " tip . . . . .	.199	.142	.190	.177	
3- " base . . . . .	.188	.124	.167	.160	.171
3- " middle . . . . .	.209	.140	.187	.179	
3- " tip . . . . .	.201	.132	.187	.173	
Averages . . . . .	.197	.136	.187	.1735	

The three kinds selected are representative of the large number of varieties of soybeans that vary greatly in season of growth and size of seed. The above figures are derived from 1,750 seeds each, excepting for the one-seeded lots, where only 950 could be secured for each of the three kinds, and making a total of 29,100 seeds.

It is observed that the largest seeds are produced in the one-seeded pods, there being but a very minor exception to this rule in the Wilson group in favor of the two-seeded tip.

It is seen by the last column that the two-seeded pods bear somewhat heavier seeds than the three-seeded pods; in other words the average weight of seeds in a pod is in inverse ratio to the number of seeds in the pod.

It is further noted that within the pod the seeds usually vary in weight. For example, the basal seeds in two-seeded pods average 4.52 per cent lighter than those produced in the distal end of the pod. In the Ito San, however, the weights for the two positions are the same. In the three-seeded pods the seeds

of the basal position are uniformly remarkably light, the lightest of all the pods, while those at the tip are next heavier, and those at the middle exceed all others in weight. In other words, the extreme in weight of all the positions is found adjoining in the 3-seeded pod, with a difference of 10.26 per cent.

Omitting the single-seeded pods which have the seeds neither base nor tip, it is observed that the basal seeds of both the 2- and 3-seeded pods are the lightest respectively in the order here given, and the tip seeds, in a similar manner, have the next higher weights, leaving the 3-seeded middle seeds with the heaviest rank.

Soybeans, in which selfing is the rule, should yield strains with marked uniformity of structural units, but among the pure lines the results in seed weight are as shown. It goes without writing that the hope of so standardizing leguminous plants that their seeds will be uniform in weight is groundless. Differences in weight, and somewhat in shape, must be accepted as due in part to environment within the plant and the determination of the relation of seed-position in the pod to crop-production becomes a significant economic problem. Sufficient results have been obtained to warrant the opinion that the location of the seeds upon, and in, the plant is a factor worthy of serious consideration in connection with its bearing upon field and garden culture.

The chief object of the present note is to call attention to a phase of botanical study that is within the reach of many, and to suggest that persons in widely separated regions may make substantial contributions to a knowledge of the seed-weights of wild plants that, like the soybean, have their seeds borne in pods. Of such one might name the lupines, *crotolaria*, *genista*, *baptisia*, wild-beans, *amorpha*, *vicia*, *lathyrus*, etc.

To some students the wild plants are more appealing than the cultivated kinds and for the present purpose may be superior because of the relative freedom from pod and seed diseases that often modify the records of subjects from the field and garden.